



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,620	08/05/2003	Paolo Lorenzo Ciacci	12693.0023.00US00	1619
26004	7590	10/20/2004	EXAMINER	
HOWREY SIMON ARNOLD AND WHITE LLP			VERDIER, CHRISTOPHER M	
750 BERING DRIVE			ART UNIT	
HOUSTON, TX 77057			PAPER NUMBER	

3745

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/604,620

Applicant(s)

CIACCI ET AL.

Examiner

Christopher Verdier

Art Unit

3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12-31-03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 13 is/are rejected.
- 7) ☒ Claim(s) 4-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 092204.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 3745

Receipt and entry of Applicants' Preliminary Amendment dated December 31, 2003 is acknowledged.

### *Specification*

The disclosure is objected to because of the following informalities:

On page 1, line 1, "Description" is superfluous and should be deleted.

It does not contain page numbers.

Appropriate correction is required.

### *Examiner's Suggestions to Claim Language*

The following are suggestions to improve the clarity and precision of the claims:

In claim 2, line 2, -- at least one -- may be inserted after "said" (second occurrence).

In claim 4, line 4, -- at least one -- may be inserted after "said".

In claim 6, line 3, -- at least one -- may be inserted after "said" (both occurrences).

In claim 6, line 4, -- at least one -- may be inserted after "said".

In claim 6, line 7, -- at least one -- may be inserted after "said".

In claim 7, line 2, -- at least one -- may be inserted after "said".

In claim 10, line 2, -- at least one -- may be inserted after "said".

### *Claim Objections*

Claims 5-12 are objected to because of the following informalities: Appropriate correction is required.

Art Unit: 3745

In claim 5, line 3, "(68)" should be changed to -- (69) --.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by either Coutandin 2003/017051 or European Patent 1,277,918. Note the blade 1 for a stator 2 of a variable geometry turbine of an aircraft engine, the stator comprising a supporting structure 4, 5, and the blade comprising an airfoil 26/27 profile hinged to the supporting structure to rotate about an axis 10 inside a conduit 3 and comprising a pressure front wall 26 and a suction rear wall 27, two end walls 21, 22 located at opposite ends of the airfoil profile, with respect to a direction parallel to the axis, and cooperating in sliding manner with the supporting structure, and cooling means 64 for cooling the end walls 21, 22, with the cooling means comprising a number of holes 64 for the passage of a cooling fluid from an inner cavity 16 of the blade, characterized in that the holes 64 have respective unnumbered outlets close to an outer edge near 29 joining at least one of the end walls and the front wall 26, with the outlets of the holes being formed in the at least one end wall, with the outlets of the holes being formed in a line parallel to the outer edge. The holes are formed in directions substantially parallel to the axis 10.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3 and 13 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Tuley 4,214,852 in view of Schipani 6,709,231 and McDonough 4,169,692. Tuley discloses a blade 20 for a stator of a variable geometry turbine substantially as claimed, with the stator comprising a supporting structure 16, 18, and the blade comprising an airfoil profile 21 hinged to the supporting structure to rotate about an unnumbered axis inside a conduit 14 and comprising an unnumbered concave pressure front wall and an unnumbered convex suction rear wall, and two unnumbered end walls located at opposite ends of the airfoil profile, with respect to a

Art Unit: 3745

direction parallel to the axis. The airfoil is internally cooled in an internal cavity near 172. the recitation in claim 1, line 2 of "for aircraft engines" is a recitation of intended use. A recitation of intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

However, Tuley does not disclose that the end walls cooperate in sliding manner with the supporting structure, and does not disclose cooling means for cooling the end walls, with the cooling means comprising a number of holes for the passage of a cooling fluid from an inner cavity of the blade, with the holes having respective outlets close to an outer edge joining at least one of the end walls and the front wall, with the outlets of the holes being formed in the at least one end wall, with the outlets of the holes being formed in a line parallel to the outer edge, with the holes being formed in directions substantially parallel to the axis.

Schipani 6,709,231 shows an variable pitch stator airfoil 33 having end walls 59, 60 that cooperate in sliding manner with a supporting structure 66, 67, for the purpose of providing high efficiency operation and uniform flow of gas that passes through the stator.

Art Unit: 3745

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the airfoil of Tuley such that the end walls cooperate in sliding manner with the supporting structure, as taught by Schipani, for the purpose of providing high efficiency operation and uniform flow of gas that passes through the stator.

McDonough shows a variable pitch stator airfoil having cooling means for cooling the end walls 124, 132, with cooling means comprising a number of holes 136, 130 for the passage of a cooling fluid from an inner cavity 42 of the blade, with the holes having respective outlets close to an unnumbered outer edge joining at least one of the end walls and a front wall 138, with the outlets of the holes being formed in the at least one end wall, with the outlets of the holes being formed in a line parallel to the outer edge, with the holes being formed in directions substantially parallel to pivot axis, for the purpose of providing for cooling of the airfoil end walls.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified airfoil of Tuley such that it includes cooling means for cooling the end walls, with the cooling means comprising a number of holes for the passage of a cooling fluid from an inner cavity of the blade, with the holes having respective outlets close to an outer edge joining at least one of the end walls and the front wall, with the outlets of the holes being formed in the at least one end wall, with the outlets of the holes being formed in a line parallel to the outer edge, with the holes being formed in directions substantially parallel to

Art Unit: 3745

the axis, as taught by McDonough, for the purpose of providing for cooling of the airfoil end walls.

***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ciacchi '538 and '763, Schipani '297, Landis, and Weiler are cited to show variable pitch stator vanes with cooling arrangements.

Holland, Lynch, Bluck, Chung, and Japanese Patent 55-11709 are cited to show cooled airfoils with cooling holes near the airfoil edges.

***Allowable Subject Matter***

Claims 4-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (703)-308-2638. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

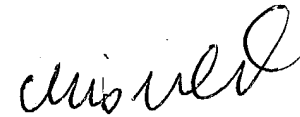
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (703) 308-1044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Art Unit: 3745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.  
October 15, 2004



Christopher Verdier  
Primary Examiner  
Art Unit 3745